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CONTENTS:

Miscellaneous Studies in the Family Aphididae (Hem., Hom.).[1]

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During the writer's study of the California *Aphididae* several questions relating to the identity and synonymy of various genera and species have arisen. A few of these questions are discussed and the writer's conclusions given herewith.

There is always present the question as to the proper limitations of genera, which oftentimes is difficult to decide. As a general rule, the writer does not believe in the formation of a vast number of genera on slight structural differences. However, there are included in some genera species of such widely different characters that, although a specific determination may

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be readily accomplished, a generic determination is quite difficult. The genus *Aphis* Linn., as understood by American aphidologists, is an example of this. *Macrosiphum* Passerini is another. Occasionally one finds a species that does not fit into any genus, or that will fall into any one of a number of genera, according to which table is used for the determination. It is far simpler, and in the writer's opinion better, in such a case, to describe a new genus for that species.

I. The Genus Macrosiphoniella Del Guercio.

In 1911 Del Guercio[2] described the genus *Macrosiphoniella,* designating as the type species, *Macrosiphum atrum* (Ferr.). The following species he also placed in this genus: *Siphonophora absinthii* Koch, *Siphonophora artemisiae* Pass.[3] (*tanacetaria* Koch), *Aphis campanulae* Kalt., *Macrosiphoniella chrysanthemi* Del Guer., *Siphonophora linariae* Koch, *S. lutea* Buckton, *Aphis millefolii* Fabr., *A. solani* Walker and *A. viciae* Kalt.

This genus is quite similar to *Macrosiphum* Pass., except that the cornicles are not considerably longer than the cauda; in fact they are oftentimes shorter. Del Guercio separates it from *Macrosiphum* Pass. and *Megoura* Buckt. by the following key:

"Sifoni corti presso a poco della lunghezza della codetta:
"Sifoni distentamente clavati..*Megoura* Buckton.
"Sifoni cilindrici, piu o meno allargati, talvolta, all base.....*Macrosiphoniella* Del Guer.

[2] Del Guercio, A. Redia 7: 331-333. 1911.

[3] Theobald (Jour. Econ. Biol., 8: 71. 1913.) credits this species to Boyer de Fonscolombe, and from his description it would certainly fit into this genus. Wilson (Trans. Amer. Ent. Soc., 41·97. 1915) describes a species from *Artemisia* in Oregon under this name. He places *S. frigidae* Oestlund as a synonym. It is probable that he had Oestlund's species, but he could not have had this one, for in his material the cornicles were fully twice as long as the cauda. The measurements were: cornicles 0.73 mm., cauda 0.30 mm. (alate); cornicles 0.52 mm., cauda 0.27 mm. (aptera). Therefore *Siphonophora frigidae* Oestlund is distinct and belongs to the genus *Macrosiphum* Pass., while *S. artemisiae* Fonsc. belongs to the genus *Macrosiphoniella* Del Guer. The latter species has, to date, never been reported from America.

"Sifoni lunghi o lunghissimi, sempre molto piu lunghi della codetta..*Macrosiphum* Passerini."

The species in this genus have heretofore been considered as belonging to *Macrosiphum*, but the writer is in full accord with Del Guercio in placing them in a distinct genus.

The question was brought to the writer's attention on taking specimens of *M. sanbornii* Gillette on chrysanthemums at Stanford University and in Riverside. This species cannot very well be placed in the genus *Macrosiphum* because of the short bottle-shaped cornicles which are not longer than the cauda (Text fig. 1). It does fit the genus *Macrosiphoniella* of Del Guercio, however.

Van der Goot[4] adds another species, *M. citricola* v.d.G., to this genus, making a total of twelve species. Of these, ten occur in Europe, two in Australasia, and one in America.

II. The Genus Siphonatrophia nov. gen.

The writer has recently described an aphid from Monterey and Guadalupe cypress under the name of *Cerosipha cupressi* Swain.[5] At that time he was doubtful as to its generic position, so placed it provisionally in *Cerosipha*. Since then he has had opportunity to study it further and has come to the conclusion that it does not fit into any described genus. Consequently he proposes a new genus for the species, naming it *Siphonatrophia* (from its atrophied cornicles). Below is a brief description of the genus.

Body of alate small and of the shape of *Aphis*, but the body of the apterae with a very swollen and convex abdomen. Forehead flat and without frontal protuberance. Antennae short, scarcely reaching to the abdomen, five-segmented, and without antennal tubercles. Segments three and five subequal, and the base and spur of five subequal. Body without lateral tubercles

[4] Van der Goot, P. Zur Kenntniss der Blattläuse Java's. Contrib. à la Fauna des Indes Néerlandaises, 1: 34. 1917.

[5] Swain, A. F. New *Aphididae* from California. Trans. Amer. Ent. Soc. 44: 19-22. 1918.

on prothorax or abdomen. Legs normal in alates, but short and stout in apterae. Cornicles merely pores, with the opening broader than long, slightly flanged near the mouth. Cauda of alates long and ensiform or triangular, of apterae short and conical. Anal plate distinct and fairly conspicuous, broadly rounded. Rudimentary gonapophyses two. Wings long and slender, being much longer than the body, and with an *Aphis*-like venation, in which the second branch of the third discoidal is nearer to the tip of the wing than to the base of the first branch.

Type: Cerosipha cupressi Swain, on *Cupressus guadalupensis* and *C. macrocarpa,* Riverside and San Diego counties, California. This species lives singly on the tips of the leaves of cypress. The alates are very rare, which facts seems to indicate an alternation of host plants. The alternate host, if any, is unknown.

This genus is somewhat similar to *Sipha* Passerini and to *Cerosipha* Del Guercio, especially in the five-segmented antennae and the aphidine venation. In *Cerosipha* Del Guercio the cornicles are longer, while in *Sipha* Passerini the cauda is knobbed and the body flat and covered with long fine hairs. In venation it resembles *Aphis padi* Linn. and *Aphis prunifoliae* Fitch. The cauda reminds one of *Siphocoryne* Passerini or *Myzus* Passerini. In Wilson's keys to the *Aphidini*[6], this falls into either *Brachycolus* Buckton or *Cryptosiphum* Buckton. From both it differs in the five-segmented antennae. The short pore-like cornicles and the shape of the body separate it from the former, and the shape of the cauda from the latter. From *Setaphis* v.d.G.[7], which it resembles somewhat superficially, it differs in lacking the "Siphunculoidae" and in the typical *Aphis* venation with the twice-branched cubital vein.

1. Cornicles cylindrical and as broad as long. Body slender.....
Brachycolus Buckton. Type: *Aphis stellariae* Hardy.

[6] Wilson, H. F. A key to the genera of the subfamily *Aphidinae* and notes on synonomy. Annals Ent. Soc. Amer., 3: 321-322. 1910.

[7] Van der Goot, P. Zur Kenntniss der Blattläuse Java's. Contrib. Fauna des Indes Néerlandaises, 1: 153. 1917.

Cornicles barely distinguishable, being only small pores. Body oval and distended, particularly in the apterae.....2

2. Antennae five-segmented. Cauda of alates long and ensiform, and of apterae short and conical, but well developed.....

Siphonatrophia nov. gen. Type: *Cerosipha cupressi* Swain.

Antennae six-segmented. Cauda short and tapering and not developed in the apterae.....

Cryptosiphum Buckton. Type: *C. artemisiae* Buckton.

III. The Genus Monellia Oestlund.

In 1887 Oestlund[8] described the genus *Monellia* with *Aphis caryella* Fitch as the type. He separated this genus from *Callipterus* Koch by the position of the wings when at rest. In the latter they are held roof-like as is typical in the *Aphididae*, while in the former they are horizontal, that is, laid flat on the abdomen. Following is Oestlund's description of the genus:

Antennae longer than the body, on no frontal tubercles. Eyes pale red; ocelli present. Beak very short. Thorax low and flat; prothorax nearly as large as thorax proper. Wings held horizontal in repose; venation as in *Callipterus*. Honey-tubes not obvious. Style short, enlarged at apex.

As just stated, *Aphis caryella* Fitch was designated as the type. In this species the wings are said to lie horizontal when the insect is at rest. Many times in California there has been taken on walnut a species which has been considered as *caryella* Fitch. Careful comparisons with mounted specimens from Indiana show no structural differences, so that there can be no doubt that they are identical. However, the species in California does not have the habit of holding the wings horizontal when at rest. It would seem, therefore, that this habit is variable.

Many of the American aphidologists have considered *Callipterus caryae* Monell as belonging to this genus. Here is another species that does not have this habit, at least in California. Specimens from California agree perfectly with specimens in the writer's collection from Pennsylvania. The writer has been

[8] Oestlund, O. W. Synopsis of the *Aphididae* of Minnesota. Bull. Minn. Geol. and Nat. Hist. Survey, 4:44. 1887.

unable to find any authentic record as to the wing position in this species.[9]

In *Monellia californicus* Essig, the wings are not held horizontal. The one other species in this genus, *M. costalis* (Fitch) is unknown to the writer, and in Baker's[10] description no statement is made concerning this point.

Inasmuch as this character of wing position is variable in the type species, it cannot be considered of importance in separating genera. Furthermore it is the writer's opinion that a character, such as this, which cannot be used in the determination of mounted specimens, should not be considered. A large part of the systematist's study must necessarily be with museum specimens, and such a character cannot be of any use then. Therefore, the retaining of this genus does not seem justifiable.

Practically all of the species considered by the earlier American aphidologists as belonging to *Callipterus* Koch have been transferred to *Myzocallis* Passerini. In this latter genus are those species with the antennae set on more or less distinct antennal tubercles and with the cornicles, although small, distinct and almost as long as, or longer than, wide. This leaves, therefore, in *Callipterus* Koch only those species without antennal tubercles and with pore-like cornicles. Here, then, belong the four species of *Monellia* Oestlund.

Baker[11] gives a key to these American species. All four have as their hosts, species of either *Carya* or *Juglans,* or of both. *C. californicus* (Essig) is known to occur only in California, and *C. costalis* (Fitch) in New York and Connecticut. The other two species, *C. caryae* Monell and *C. caryella* (Fitch), are found throughout the north and middle Atlantic, the middle western, and the Pacific Coast States. In the west they are of rare occurrence, however.

[9] Essig (Pom. Jour. Ent., 4: 771. 1912) in comparing his species, *californicus,* with Thomas's description of *caryae* Monell states that in the latter the wings are held horizontal. Thomas's note is not accessible to the writer, however.

[10] Baker, A. C. Eastern Aphids, new or little known. Part II. Jour. Econ. Ent., 10: 424. 1917.

[11] Baker, A. C. *Op. cit.*

IV. A New Species of the Genus Thripsaphis Gillette.[12]

In October, 1917, specimens of a species of *Thripsaphis* were received by the writer from Mr. G. F. Ferris of Leland Stanford Junior University. These had been found on the leaves of *Carex* sp. near San Francisquito Creek, Santa Clara County, California. Not being able to identify them with any known species, the writer herewith describes them as a new species,

Thripsaphis caricicola nov. sp. (Text figs. 2-6).

Cotype specimens are in the writer's private collection in Riverside, and in the U. S. National Museum, Washington, D. C.

Locality: Santa Clara County, California. Collector: A. P. Batchelder. Date: October 26, 1917. Host: *Carex* sp.

Alate viviparous female.—General body color yellow and dusky black. Head yellow with margins dusky. Antennae dusky to black, except base of segment three, which is pale. Eyes reddish brown. Beak yellow with tip black. Prothorax dusky with median yellow stripe. Thoracic plates black. Legs yellowish with tarsi and tips of tibiae and of femora black. Abdomen yellow with four rows of darker spots, two lateral and two sublateral. Cauda and anal plate dusky.

Body rather long and narrow, resembling somewhat that of a thrips. Head about two-thirds as long as wide between the eyes. Front with a prominent semiquadrangular protuberance (fig. 2), which is about as wide as long, and as large as the first antennal segment. Antennae (fig. 4) about three-fourths as long as the body. No antennal tubercles. Segment III the longest, being but slightly shorter than IV and V, or V and VI combined. V about five-sixths as long as IV, which in turn is slightly shorter than VI. VI base and spur equal. The usual primary sensoria on V and VI and accessory sensoria on VI. Secondary sensoria only on III, being circular, equal-sized, and placed in a more or less straight row on the basal three-fourths of the segment: 11 to 12 in number. Beak short scarcely reaching first coxae. No lateral tubercles on the prothorax or abdomen. Cornicles (fig. 5) merely pores, which are about one-sixth as wide at the mouth as the length of the hind tarsi. Cauda (fig. 5) distinct, knobbed, about two-thirds as long as hind tarsi. Anal plate (fig. 5) large, prominent, deeply bilobed. Legs long and slender, normal throughout. Wings (fig. 6)

[12] Gillette, C. P. Two new Aphis genera and some new species. Can. Ent., 49: 193-196. 1917.

long and slender, venation regular, the third discoidal of the fore wing being twice branched, and two distinct oblique veins being present on the hind wing. The second branch of the third discoidal of the fore wing is nearer to the tip of the wing than to the base of the first branch.

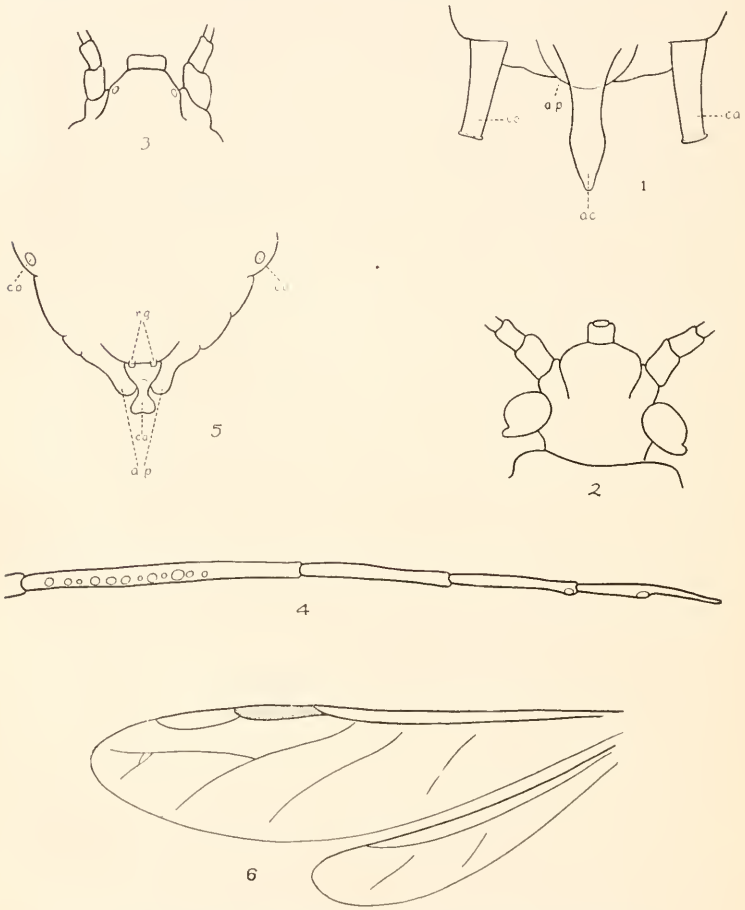

Fig. 1.—*Macrosiphoniella sanborni* (Gillette). Caudal end of abdomen.

Figs. 2-6.—*Thripsaphis caricicola* nov. sp. Fig. 2.—Head, alate. Fig. 3.—Head, aptera. Fig. 4.—Antenna, alate. Fig. 5.—Caudal end of abdomen, alate. Fig. 6.—Wings, alate.

Ca., cauda; *co.*, cornicle; *a. p.*, anal plate: *r. g.*, rudimentary gonapophyses.

All drawings were made with the camera lucida, and all except fig. 6, with the 25 mm. ocular and 16 mm. objective. Fig. 6. was made with the same ocular, but with the lower lens of the 16 mm. objective removed.

Measurements: Body, length (including both cauda and frontal protuberance) 2.11 mm., width of thorax 0.609 mm.; antennae, total 1.79-1.81; III, 0.609-0.646 mm.; IV, 0.340-0.357 mm.; V, 0.297-0.306 mm.; VI, base, 0.174-0.187 mm.; VI, spur, 0.174-0.187 mm.; cornicles, width at mouth, 0.025-0.032 mm.; cauda, 0.119 mm.; hind tarsi, 0.170-0.187 mm.; wing, length, 2.77-2.86 mm.; width, 0.799 mm.; expansion, 6.14 mm.; third discoidal from base of first branch to tip of wing, 0.837 mm.; from base of second branch to tip of wing, 0.242 mm.

Apterous viviparous female.—General color of body yellow. Eyes reddish brown. Antennae with segments I, II and III (except extreme tip) light straw-colored; IV, V, VI (except spur) and tip of III black. VI spur dusky but somewhat lighter than base. Legs with tarsi and joints black, remainder lighter.

Structural characters as in alates, except no secondary sensoria.

Measurements: Body, length (including both cauda and frontal protuberance) 2.04-2.28 mm.; width of thorax, 0.51-0.54 mm.; antennae, total 1.22-1.62 mm.; III, 0.408-0.553 mm.; IV, 0.221-0.306 mm.; V, 0.204-0.272 mm.; VI, base, 0.136-0.170 mm.; VI, spur, 0.136-0.170 mm.; cornicles, width at mouth, 0.032-0.035 mm.; cauda, 0.085-0.119 mm.; hind tarsi, 0.153-0.170 mm.

This species seems typical of the genus except for the fact that both oblique veins of the hind wings are distinct. However, as Gillette[13] states, "the presence or absence of the vein should not be given generic importance." From the figures of *T. verrucosa* Gillette, the species seems very closely related to the one described here. As only apterous oviparous females of that species were described, it cannot now be determined whether or not they are synonymous.

A Gynandromorph of Callosamia angulifera and Melitaea phaeton aber. streckeri (Lep.).

Doris M. Armstrong, of Brockett Point, Branford, Connecticut, has sent me for examination two very interesting specimens. One is a perfect gynandromorph of *Callosamia angulifera.* The wings of the left side are of the dark color of the male and the antenna of this side is male. The wings and antenna of the right side are female in color and character. The specimen was a captured one.

Perfect examples of gynandromorphism are evidently of rare occurrence and they are more interesting when the sexes of the species are so different in appearance.

The other example is an aberrant specimen of *Melitaea phaeton* Drury, and is very similar to the form described by Ellsworth in Ent. News 1902, XIII, 104, under the name *streckeri.* Ab. *streckeri* was taken at Vestal, New York.—Henry Skinner.

[13] Gillette, C. P. *Op. cit.*, p. 194.